

1 This listing of claims will replace all prior versions, and listings, of claims
2 in the application:

3

4 **Listing of Claims**

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6 Claim 1 (Previously presented): A method comprising:
7 identifying, in response to a search query, first multimedia objects having
8 an associated keyword that matches a keyword in the search query and second
9 multimedia objects that have content features similar to those of the first
10 multimedia objects;

11 presenting the first and second multimedia objects to a user;
12 monitoring feedback from the user as to which of the first and second
13 multimedia objects are relevant to the search query; and
14 annotating one or more of the multimedia objects, which are deemed
15 relevant by the user, with the keyword.

16

17 Claim 2 (Original): A method as recited in claim 1, further comprising:
18 maintaining associations between the keywords and the multimedia objects,
19 the associations being weighted to indicate how relevant the keywords are to the
20 multimedia objects; and
21 adjusting the weights of the associations based on the user's feedback.

22

23 Claim 3 (Original): A method as recited in claim 2, wherein the adjusting
24 comprises increasing a weight of an association between the keyword and a
25 particular multimedia object that is deemed relevant by the user.

1
2 Claim 4 (Original): A method as recited in claim 2, wherein the adjusting
3 comprises decreasing a weight of an association between the keyword and a
4 particular multimedia object that is deemed irrelevant by the user.

5
6 Claim 5 (Original): A method as recited in claim 4, further comprising
7 removing the keyword from the particular multimedia object in an event that the
8 weight is less than a threshold value.

9
10 Claim 6 (Original): A method as recited in claim 1, further comprising
11 training how the first and second multimedia objects are identified based on the
12 user's feedback.

13
14 Claim 7 (Original): A method as recited in claim 1, further comprising
15 refining the search to identify additional multimedia objects that contain content
16 features similar to those of the multimedia objects indicated by the user as being
17 relevant.

18
19 Claim 8 (Original): A method as recited in claim 1, wherein the multimedia
20 objects comprise one of digital images, video objects, and audio objects.

21
22 Claim 9 (Original): A computer readable medium having computer-
23 executable instructions that, when executed on a processor, perform the method as
24 recited in claim 1.

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1 Claim 10 (Original): A method comprising:

2 iteratively retrieving multimedia objects from a database and monitoring
3 feedback from a user as to whether the multimedia objects are relevant to a
4 keyword in a search query; and

5 annotating the multimedia objects based on the user's feedback, with the
6 keyword.

7 8. 11
8 Claim 11 (Original): A method as recited in claim 10, wherein the
9 retrieving comprises using content-based information retrieval to retrieve the
10 multimedia objects.

11 9. 12
12 Claim 12 (Original): A method as recited in claim 10, wherein the
13 retrieving comprises using both content-based information retrieval and semantic-
14 based information retrieval to retrieve the multimedia objects.

15 10. 13
16 Claim 13 (Original): A method as recited in claim 10, wherein the
17 monitoring comprises monitoring both feature-based relevance feedback and
18 semantic-based relevance feedback.

19 11. 14
20 Claim 14 (Original): A method as recited in claim 10, wherein the
21 annotating is hidden from the user.

1 Claim 15 (Original): A method as recited in claim 10, wherein the
2 annotating comprises:

3 in an event that a particular multimedia object is deemed relevant by the
4 user and is not yet annotated with the keyword, adding the keyword to the
5 particular multimedia object; and

6 in an event that the particular multimedia object is deemed relevant by the
7 user and is already annotated with the keyword, strengthening an association
8 between the keyword and the particular multimedia object.

9 12. Claim 16 (Original): A method as recited in claim 10, wherein the
10 annotating comprises:

11 in an event that a particular multimedia object is deemed irrelevant by the
12 user and is already annotated with the keyword, weakening an association between
13 the keyword and the particular multimedia object.

14 13. Claim 17 (Original): A computer readable medium having computer-
15 executable instructions that, when executed on a processor, perform the method as
16 recited in claim 10.

17 Claim 18 (Original): A method comprising:

18 retrieving multimedia objects according to a content-based retrieval
19 process;

20 presenting the multimedia objects to a user;

21 monitoring feedback from the user as to which of the multimedia objects
22 are relevant; and

1 annotating one or more of the multimedia objects based on the user's
2 feedback, with a keyword.

3 15 14
4 Claim 19 (Original): A method as recited in claim 18, wherein the
5 monitoring comprises monitoring both feature-based relevance feedback and
6 semantic-based relevance feedback.

7 16 14
8 Claim 20 (Original): A method as recited in claim 18, wherein the
9 annotating is hidden from the user.

10 10 14
11 Claim 21 (Original): A method as recited in claim 18, wherein the
12 annotating comprises:

13 11 14
14 in an event that a particular multimedia object is deemed relevant by the
15 user and not yet annotated with the keyword, adding the keyword to the particular
multimedia object; and

16 12 14
17 in an event that the particular multimedia object is deemed relevant by the
18 user and is already annotated with the keyword, strengthening an association
between the keyword and the particular multimedia object.

19 13 14
20 Claim 22 (Original): A method as recited in claim 18, wherein the
21 annotating comprises:

22 14 14
23 in an event that a particular multimedia object is deemed irrelevant by the
24 user and is already annotated with the keyword, weakening an association between
the keyword and the particular multimedia object.

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1 18. 14
C 2 Claim 23 (Original): A method as recited in claim 18, wherein the
3 annotating comprises:
4 in an event that a particular multimedia object is deemed irrelevant by the
5 user and is already annotated with the keyword, removing the keyword from the
6 particular multimedia object.

6 19. 14
7 Claim 24 (Original): A computer readable medium having computer-
8 executable instructions that, when executed on a processor, perform the method as
9 recited in claim 18.

10 10
11 Claim 25 (Original): A method comprising:
12 maintaining associations between keywords and multimedia objects, the
13 associations being weighted to indicate how relevant the keywords are to the
14 multimedia objects;
15 retrieving a set of one or more multimedia objects for presentation to a user;
16 monitoring feedback from the user as to which of the multimedia objects
17 are relevant; and
18 adjusting the weights of the associations based on the user's feedback.

19
20 Claim 26 (Original): A method as recited in claim 25, wherein the
21 retrieving comprises using content-based information retrieval to retrieve the
22 multimedia objects.
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2 Claim 27 (Original): A method as recited in claim 25, wherein the
3 retrieving comprises using both content-based information retrieval and semantic-
4 based information retrieval to retrieve the multimedia objects.

5 Claim 28 (Original): A method as recited in claim 25, wherein the
6 monitoring comprises capturing both feature-based relevance feedback and
7 semantic-based relevance feedback.

8
9 Claim 29 (Original): A method as recited in claim 25, wherein the
10 adjusting comprises increasing the weights of the associations between the
11 keywords and the multimedia objects that are deemed relevant by the user.

12
13 Claim 30 (Original): A method as recited in claim 25, wherein the
14 adjusting comprises decreasing the weights of the associations between the
15 keywords and the multimedia objects that are deemed irrelevant by the user.

16
17 Claim 31 (Original): A computer readable medium having computer-
18 executable instructions that, when executed on a processor, perform the method as
19 recited in claim 25.

20
21 Claim 32 (Original): A system comprising:
22 an information retrieval unit to retrieve multimedia objects from a database
23 based on a search query;
24 a relevance feedback unit to capture a user's feedback as to whether the
25 multimedia objects are relevant to the search query; and

an annotation unit to annotate, with a keyword, the multimedia objects
based on the user's feedback.

21. 20
Claim 33 (Original): A system as recited in claim 32, wherein the search
query comprises a keyword-based search query having one or more keywords.

22. 20
Claim 34 (Original): A system as recited in claim 32, wherein the search
query comprises a content-based search query having one or more content features.

23. 20
Claim 35 (Original): A system as recited in claim 32, wherein the
information retrieval unit employs both content-based information retrieval and
semantic-based information retrieval.

24. 20
Claim 36 (Original): A system as recited in claim 32, wherein the
information retrieval unit comprises:

a query handler to handle both keyword-based queries having one or more
search keywords and content-based queries having one or more content features of
a multimedia object; and

a feature and semantic matcher to identify at least one of (1) first
multimedia objects having keywords that match the search keywords from a
keyword-based query, and (2) second multimedia objects having content features
similar to the content features of a content-based query.

25.

Claim 37 (Original): A system as recited in claim 32, wherein the relevance feedback unit employs both feature-based relevance feedback and semantic-based relevance feedback.

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Claim 38 (Original): A system as recited in claim 32, wherein:
the search query comprises a keyword-based search query having at least one keyword; and

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in an event that a particular multimedia object is deemed relevant by the user and is not yet annotated with the keyword, the annotation unit adds the keyword to the particular multimedia object.

11
12 Claim 39 (Original): A system as recited in claim 32, wherein:

13 the search query comprises a keyword-based search query having at least
14 one keyword; and

15 in an event that a particular multimedia object is deemed relevant by the
16 user and is already annotated with the keyword, the annotation unit strengthens an
17 association between the keyword and the particular multimedia object.

18
19 Claim 40 (Original): A system as recited in claim 32, wherein:

20 the search query comprises a keyword-based search query having at least
21 one keyword; and

22 in an event that a particular multimedia object is deemed irrelevant by the
23 user and is already annotated with the keyword, weakening an association between
24 the keyword and the particular multimedia object.

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2 Claim 41 (Original): A system as recited in claim 32, wherein:
3 the search query comprises a keyword-based search query having at least
4 one keyword; and
5 in an event that a particular multimedia object is deemed irrelevant by the
6 user and is already annotated with the keyword, removing the keyword from the
7 particular multimedia object.

8 27 20
9 Claim 42 (Original): An image retrieval system as recited in claim 32,
10 wherein the relevance feedback unit comprises a feedback analyzer to train the
11 system based on the user's feedback.

12 Claims 43-44 (Previously withdrawn)